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CSC 370

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Interpolation Assignment Report

This assignment was split into three different interpolation coding portions. Interpolation is the shading of different color values to make a smooth colored image. In part one, I had to build a square, and interpolate four different colors across it. The second part was the same as the first part, but I had to interpolate three different colors across a triangle. The final portion was for me to follow the OpenGL instructions in Anton's book and make "Hello Triangle" work.

The method I used for part one was to get the left and right sides of the square to be interpolated first, then interpolate across the image to finish out the square. I started off by building a 100 by 100 square, and setting each corner up to be a different color. The top left one was blue, bottom left was green, top right was white, and bottom right was red. After encountering a few semantic errors, I got the sides to interpolate correctly and, after a few more semantic errors, got the inside of the square to interpolate.

The method I used for part two was to get the sides of the triangle, and then interpolate the inside of the triangle. To get the sides of the triangle I used the midpoint formula, and drew the lines in red. The third line caused some issues, I made a trapezoid at one point, along with a 'Z' shape. Next I interpolated my outside lines, and had many, many issues interpolating the middle portion of my triangle, but finally I got it to work.

The method I used for part three, I followed the directions in Anton's OpenGL Tutorials book. I got the purple triangle to appear, then I continued to follow Anton's book, but ran into some errors. I made my triangle become a right triangle, and then somehow I turned my triangle white. I could not finish this portion, although I think I followed Anton's book exactly, his instructions did not work.

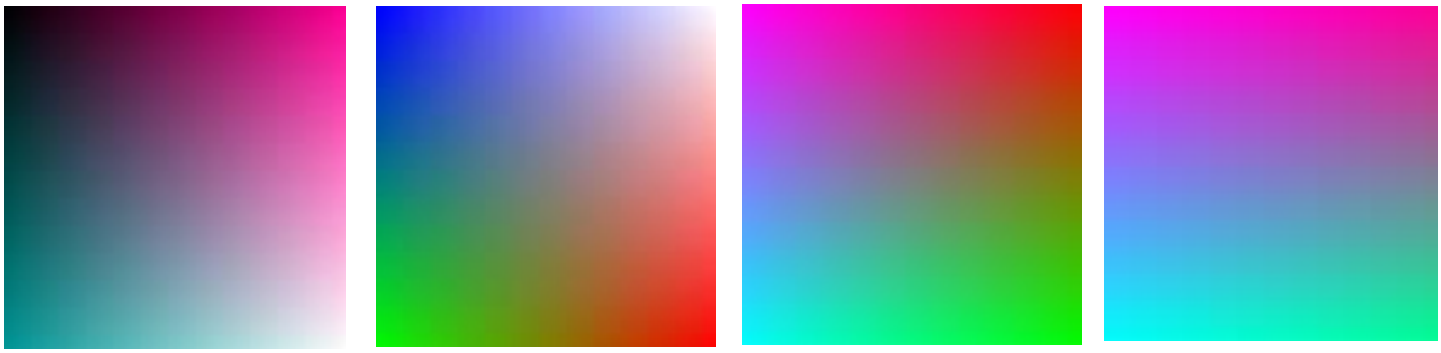
The errors that I encountered were mostly semantic errors. In part one, I could only get my side to interpolate in one color. On the blue/green side, I could only get it to fade the blue portion down, and couldn't get the green portion to show up at all. To fix this issue, all I had to do was set all my integer values up to be floats instead. This cleared my issue up right away, and when I ran into another issue later during this portion, I realized that I had accidentally typed 'int' instead of 'float.'

In part two, I got the first two sides of the triangle, but unfortunately, the third side gave me trouble. The shape that I made looked like a "Z," and then it looked like a trapezoid, and the final weird image I got was what I would call a "topless triangle." To fix these issues I had to fix my midpoint algorithm. After messing with the third line for an entire day, the line finally showed up correctly after changing my algorithm around. At first, when I tried interpolating the sides, they wouldn't work, so I had to redo the formulas and figure out which one was wrong to interpolate the sides correctly. Once I got the inside interpolated, I ran into an issue where the red portion of my triangle wouldn't show up. What I had to do to fix this was take out "-O2" in my compile line.

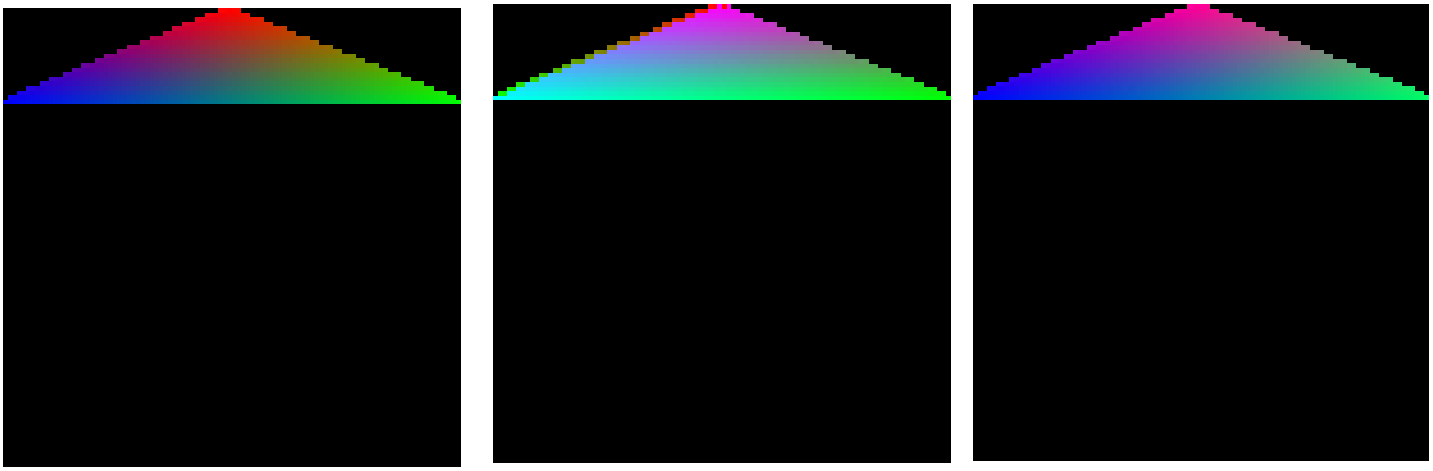
For the third part, I had many library issues that were easily fixed with help from others. Then I started to follow Anton's instructions and I went from having a purple, equilateral triangle to having a white, right triangle, and was never able to interpolate my triangle.

My results:

Part One:



Part Two:



Part Three: